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ABSTRACT

This paper discusses the three types of online learning--asynchronous collaborative learning, sametime collaborative learning, and self-paced learning--and how these modes are supported by the Lotus LearningSpace product. The following requirements for distributed learning technology are then considered: (1) flexibility, specifically the capability to support all three modes of online learning; (2) scalability, including enabling the easy development and revision of courses that allows the instructor to integrate a wide range of materials, providing an administration environment that makes it easy to manage all activities of a virtual campus, and supporting access to student profiles and distributed media resources; and (3) open solutions, an open standards-based platform allowing all the activities of course design, instruction, collaboration, and evaluation to be shared among business partners. (DLS)

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The Role of Live, Online Collaboration in Distance Learning

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The Nature of Learning Faces Change

The rapid adoption of Internet technologies has created a worldwide communication platform that has opened up vast opportunities for overhauling the delivery of education. The World Wide Web's hypertext environment has already made the simple self-paced learning experiences offered by self-education books, video courses, or computer-based training materials almost a commodity. But distributed learning, even though it has already established its value, will achieve its potential only as the technology is enhanced to make it a platform solution for all three of the most important modes of learning experiences—asynchronous collaborative learning, sametime collaborative learning, and self-paced learning.

Types of Online Learning

Asynchronous Collaborative Learning

Asynchronous, collaborative, instructor-led learning, as delivered in the pioneering Lotus LearningSpace product, is much more effective than simple self-paced learning experiences. Asynchronous collaborative learning supports multiple levels of interaction among class members, small groups and teams, and instructors. The learning environment must support tools that facilitate creating and delivering courses: posting lessons, course materials, and exams; grading assignments; monitoring assessments; and providing private and secure feedback to individual students and groups. The environment must facilitate and encourage collaborative communication among class participants at all times via online discussions (both asynchronous and sametime), shared whiteboards, application sharing, and document sharing. All this can take place in an "anytime-anywhere" environment wherever the students and instructor have access to the necessary communications network.

Asynchronous learning is the most flexible form of distributed learning, and instructors and students alike praise the quality of the learning experience it provides. Instructors who have taught LearningSpace courses report that asynchronous learning pushes students to take more responsibility for their learning and to reflect more deeply on the course material. They cannot rely as much on instructors to process the material for them in lectures, and they benefit from being able to tackle ideas at their own pace. One LearningSpace student expressed the difference this way: "In lectures one can absorb the content while remaining a passenger. In LearningSpace you are actually asked to drive the car. You can't simply sit back; every question demands thought and response."

Early users of distributed learning have been adult, part-time learners looking for quality education provided by employers, higher education institutions, training firms or professional associations. These individuals seek high-quality education for personal or professional development. They need alternatives to full-time study and traditional

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classroom delivery. They are learners who want network access to learning and want a richer learning offer than is available by buying a book or video or simply retrieving Web pages. They want an experience enhanced through interaction with peers and experts through online collaboration and the flexibility of anytime learning.

Sametime Collaborative Learning

Audio- and video-conferencing at the desktop is quickly becoming a practical application as improvements in computing power and high-bandwidth networks spread through corporations and educational institutions. The combination of computer-based video with other computer-support tools, such as electronic whiteboards and the ability to share applications, has been quickly adapted into distributed-learning applications. Lotus is bringing this sametime learning technology into the LearningSpace product family with the code-named LearningSpace "Live," based on the DataBeam Learning Server from DataBeam Corporation (acquired in May 1998 by Lotus Development Corp.), and other Lotus Sametime technology. LearningSpace "Live" supports sametime learning applications that deliver real-time audio and video with support for shared objects—whiteboard, multimedia, private conversations, chat, and other features.

Sametime learning provides synchronous collaboration and event-structured learning experiences. These are distributed counterparts to learning activities that once required sameplace, face-to-face contact—lectures, seminars, demonstrations, classroom discussions, office hours and project team collaborations. Sametime learning requires instructor facilitation tools to control presentations, ask questions of students, "call on" students, and manage the discussion and interaction in the sametime session. It also requires "awareness" of who else is online for *ad hoc* student-to-student, sametime interaction.

Sametime applications are expanding their reach into markets for distributed learning and collaboration once served by audio- and video-conferencing. Sametime courses can be taught simultaneously to multiple remote sites. Special events can be scheduled to present course content and to support asynchronous course materials.

Self-Paced Learning

"Self-paced" describes learning experiences that often mix a variety of media including books, videos, audiotapes, and computer-based training materials. The World Wide Web's hypertext structure and support for multimedia makes Web-based documents obvious replacements for some of these technologies. Delivery of frequently used training materials such as new employee orientations as Web-based content is commonplace, even though development of effective materials is still time-consuming.

Increasingly, self-paced education will be but one component within a complete platform for on-line learning as improved content-development tools and support for industry standards make it easier to integrate quality self-paced learning objects into the online, anytime learning environment.

The Requirements for Distributed Learning Technology

Internet technologies have given distributed learning a jumpstart in its rush for market acceptance. Hypertext, rich text, collaboration tools, real-time audio and video, and streaming media put the tools of teaching on the PC desktop. Before distributed learning can provide the kind of radical changes its supporters envision in the market, today's products must deliver a greater proportion of the full solution than they currently provide.

Take multimedia content as an example: Delivering multimedia content across an intranet to a student's PC can be done today. But delivery technology—Web browsers, plug-in applications, streaming media servers—is just one piece of a much larger puzzle. Delivering multimedia content to thousands of students requires systems support on a very different scale. Managing archives of multimedia objects—putting them into searchable indexes, making them available to instructors, creating libraries of standard objects that can be easily linked into lessons, packaged and sold or even rented on a per-use basis—requires a structure of solutions that adds more robust course-creation applications, administration functions, standards-based formats, and archives.

The technologies used in distributed learning solutions must be turned into complete solutions that address the needs and opportunities facing higher education and corporations.

Flexibility

A distributed learning solution must support all three modes of distributed learning and the media native to each mode in order to provide the course developer and instructor with a full set of instructional and facilitation tools—and be architected in such a way that the product can keep up with the moving target of PC capabilities:

- **Sametime learning**—The traditional methodologies of seminar and lecture aren't made obsolete by distributed learning. They become instructor-led, event-based learning experiences that can be integrated into a course and ad hoc study group sessions that require support for their own media tools, such as shared whiteboards and the ability to share applications across the network.

- **Asynchronous collaborative learning**—Learners need the flexibility to access learning anytime and anywhere on a globally distributed basis. Instructors, experts and colleagues are critical to the learning process and only asynchronous collaborative learning supports the richness and social interaction required for many forms of learning while providing the flexibility of anytime, anywhere access.

- **Self-paced learning**—The integration of self-paced education with asynchronous and sametime education solutions requires tools that save instructors from doing double work to make a course serve the needs of a collaborative group, while also allowing an individual student to profit from self-guided study and review.

Scalability

Scalability will be critical to a distributed learning solution. It must support much more than just taking a course online:

- It must enable the easy development and revision of courses in an environment that lets an instructor integrate materials ranging from a single question to a live lecture to an entire series of lessons.

- It must provide an administration environment that makes it easy to manage all the activities of a virtual campus from managing individual courses (to archive a completed instance of a course, to open a new instance) to managing a catalog of courses, registrations, sametime events, instructor schedules, and student profiles and records.

- It must support access to student profiles and distributed media resources via standards-based formats, methods, and repositories.

Open Solutions

A distributed education solution must provide an open platform so that all the activities of course design, instruction, collaboration, and evaluation can be shared among business partners for complete solutions. The marketplace demands a standards-based platform that will support a value-chain approach to distributed learning:

- Corporations want a decision-to-desktop solution. They want to be able to choose from standard courses, integrate them with proprietary materials, outsource the hosting of courses, contract for instructional services, and interface their existing systems to these sources so that the course is delivered to the desktop quickly and easily.

- Academic institutions and training companies want a manageable, efficient environment for the maintenance and delivery of courses. This would give them access to larger markets for their existing products, and would create new markets for their course-creation and instruction services.

- Service providers will build businesses on hosting courses and providing shared collaboration spaces and libraries of media objects.

Excerpted from "LearningSpace: Turning Technology into Solutions for Distributed Learning," a White Paper by Lotus Development Corp, Draft June 98. The final version of this White Paper will be published in July 1998.

Autobiographical Sketch

Debra Black is the Market Development Manager for Corporate Training and Distance Learning at DataBeam Corporation. She has worked in the field of communication technology since 1985. Black's work focuses on the impact of communications technology in corporate distance learning and training. She is an active member of the American Society

for Training and Development, the Western Cooperative for Telecommunications, and the Masie Center Online Learning Council, and is responsible for designing and implementing her own sales training programs. A graduate of the Duke University Fuqua School of Business, Black also works proactively with educational institutions to promote distance learning in the classroom. Prior to joining DataBeam, Black was a product manager at Exide Electronics.

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